October 15, 2018

By Electronic Filing

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Re: *Unlicensed Use of the 6 GHz Band*, ET Docket No. 18-295

Expanding Flexible Use in Mid-Band Spectrum between 3.7 and 24 GHz, GN Docket No. 17-183

Dear Ms. Dortch:

This letter responds to recent filings by Encina Communications Corp. ("Encina"),[1] the National Association of Broadcasters ("NAB"),[2] and the Ultra Wide Band Alliance ("UWBA"),[3] which lack any substantial engineering analyses or specific regulatory proposals. These filings nonetheless ask the Commission to impose severe and unnecessary restrictions on unlicensed broadband use in the 6 GHz band. This unwarranted regulation would dramatically undermine investment and the utility of the band for consumers and enterprises whose data needs require vast amounts of additional unlicensed mid-band spectrum. Furthermore, the draft NPRM that the Commission released on October 2, 2018[4] already addresses the interference concerns raised in each of these filings. While there will be ample opportunity to discuss these issues in the comment period, we nevertheless briefly address them in this letter.

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1 Letter from Michael Mulcay, Chairman & CTO, Encina Communications Corp., to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 17-183 (filed Sept. 20, 2018) ("Encina Ex Parte"); Letter from Michael Mulcay, Chairman & CTO, Encina Communications Corp., to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 17-183, ET Docket No. 18-295 (Oct. 15, 2018).

2 Letter from Patrick McFadden, Associate General Counsel, National Association of Broadcasters, to Marlene H. Dortch, Secretary, Federal Communications Commission, ET Docket No. 18-295 (filed Oct 10, 2018) ("NAB Ex Parte").

3 Letter from Timothy Harrington, Executive Director, Ultra Wide Band Alliance, to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 17-183 (filed Oct. 11, 2018) ("UWBA Ex Parte").

4 *Unlicensed Use of the 6 GHz Band*, Draft Notice of Proposed Rulemaking, ET Docket No. 18-295, GN Docket No. 17-183, FCC-CIRC1810-01 (rel. Oct. 2, 2018) ("Draft NPRM").

ENCINA COMMUNICATIONS CORP.

Encina proposes a hybrid regulatory regime in which access points ("APs") would be licensed and coordinated under Part 101 of the Commission's rules and communicate with unlicensed 6 GHz client devices.[5] Encina's approach is completely unworkable for many reasons. It is incompatible with widespread consumer use, would curtail future fixed point-to-point deployments if it were to succeed, and is well outside the scope of issues raised in this proceeding because it would require revisions to established Part 101 rules in addition to Part 15 rules. Furthermore, Encina's approach would raise each of these new problems without any offsetting advantages. The AFC framework proposed in the draft NPRM would protect incumbent licensees in an efficient, automated way, and without transforming RLAN access points into licensed devices, thereby avoiding added regulatory burden and other unnecessary complications.

Most significantly, Encina's proposal would apparently require every access point to be licensed and coordinated, a process that is clearly not viable for millions of unlicensed access points expected to be deployed in the 6 GHz band.[6] Although Encina provides few details,[7] this would apparently require an application submitted through the Commission's Universal Licensing System, Commission review of every application, Commission issuance of a call sign for every AP, and other burdensome regulatory procedures.[8] Moreover, in keeping with existing Part 101 rules, each access point would have to be manually coordinated, which would likely involve hiring a professional frequency coordinator for each installation.[9]

Encina does not appear to appreciate how dramatically this would undermine the consumer and enterprise markets for 6 GHz access points. If the FCC were to adopt Encina's proposal and impose regulatory/administrative burden and expense on every 6 GHz access point akin to that required for registration of a licensed point-to-point link, the Commission's rules would eliminate the central benefit of unlicensed technologies to consumers and enterprises. Because consumers and enterprise users constitute a key market for RLAN devices, Encina's proposal would drive away investment, relegating 6 GHz RLAN devices to only niche applications, contrary to the public interest. Encina may see the 6 GHz band as a resource only for a small set of specialized carrier-like corporate users, but this is inconsistent with the

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5 *Seen generally* Encina Ex Parte, Attachment.

6 *See, e.g.*, *id.* at 10.

7 Encina's proposal appears to trade simplicity for a lack of regulatory clarity. Its proposed new rule relating to access points, for example, simply states that they "must comply with all the applicable parts of Rule 101." *Id*. It is unclear which of the hundreds of sections of Part 101 would be deemed "applicable" to this type of deployment, which is unlike any other system authorized under Part 101. This issue alone would likely require a complex proceeding to resolve.

8 *See, e.g.*, 47 C.F.R. §§ 101.5, 101.21(f).

9 *See id.* §§ 101.21(f), 101.103.

Commission's vision expressed in the draft NPRM of promoting universal access to broadband connectivity and supporting 5G services.[10]

Moreover, because Encina's plan would make every user of an AP into an FCC licensee, the proposal would entitle 6 GHz APs to interference protection and coordination priority relative to later-filed Part 101 applications[11]—an unprecedented new regulatory status that we neither seek nor desire for RLAN operations. This sort of approach could curtail future fixed deployments in the band, by creating reciprocal coordination and interference protection rights between broadband APs and fixed point-to-point links. If Encina's proposal did not fundamentally undermine the business case for 6 GHz RLAN devices as we predict, Encina's proposal would likely result in spectrum availability challenges for new or modified 6 GHz links in densely populated areas.

Finally, Encina's proposal raises issues that are far afield from those the Commission has considered in preparing its draft NPRM. Because it would convert 6 GHz RLAN access points into *licensed* devices, it implicates an entirely separate rule part besides Part 15 and would significantly depart from the framework that the Commission, based upon an extensive record, has developed in the draft NPRM. Encina's proposals would add unnecessary complications by suggesting the Commission rely on an unviable new licensing framework, contrary to the goals of the draft NPRM.

NATIONAL ASSOCIATION OF BROADCASTERS

NAB submitted a brief letter voicing concerns about the authorization of low-power indoor devices in the proposed U-NII-6 and U-NII-8 bands and asking for the addition to the draft NPRM of questions regarding whether these operations should be limited to "residential areas."[12] We welcome NAB's participation in this proceeding, and agree that electronic newsgathering operations should be protected from harmful interference. NAB's filing, however, does not offer any substantive technical analysis on this issue. Nonetheless, it asks the FCC to pursue additional regulations that would cripple 6 GHz RLAN deployments.

Furthermore, NAB's discussion of the methodology of the RKF Study does not call the Study's findings into question. NAB largely reiterates issues raised several months ago by the Fixed Wireless Communications Coalition, all of which we have already addressed. For example, NAB repeats FWCC's incorrect allegation that the RKF Study somehow overlooked uncommon worst-case scenarios.[13] RKF's analysis, however, actually included the full range of possible values for numerous parameters, representing the range of possible outcomes as a

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10 *See* Draft NPRM ¶ 1.

11 *See id*. § 101.21(f).

12 *See* NAB Ex Parte at 1-2.

13 *Id.*, Attachment at 7.

detailed probability distribution, not a simple "average."[14] NAB also claims, without providing any evidence, that the RLAN duty cycle RKF derived in its study, 0.44%, indicates that there could be up to "225 times more users" than RKF assumed.[15] Again, this misunderstands RKF's duty cycle analysis. The RKF Study aggregated the combined data consumption of *every person* in the United States streaming high-definition video simultaneously (equivalent to a 0.44% duty cycle *per device*), in addition to using nine other devices in a low activity mode. NAB's suggestion that this extreme level of RLAN utilization—which is already far greater than any reasonable extrapolation of broadband growth trends—could be multiplied by another 225 times is clearly implausible. NAB's other criticisms follow a similar pattern: reiterating previous assertions by fixed-wireless and fixed-satellite interests, without considering the detailed responses we have already provided to these claims.[16] Moreover, more than six months ago, our group of companies provided NAB with a detailed technical briefing on our proposal for the 6 GHz band. This briefing included the RKF engineers who undertook the technical analysis. NAB did not raise any specific technical concerns during this briefing, nor did they show any interest in further discussions or request any follow-up meetings. Now, however, after the release of the draft NPRM, NAB erroneously claims that we "refused to allow RKF to explain their work."[17] On the contrary: we welcome further opportunities to facilitate engineer-to-engineer discussions with NAB.

As with Encina's proposal, NAB's suggestion to investigate the possibility of limiting 6 GHz RLANs only to residential areas is unsupported and unnecessary. But it would impose real costs on the consumers and enterprises that desperately need additional unlicensed spectrum, relegating 6 GHz technologies to niche uses rather than filling the critical need for unlicensed broadband spectrum for general consumer and business users. NAB's proposal also suffers from other important flaws, such as the likely impossibility of usefully distinguishing between residential areas and non-residential areas (NAB does not offer any definition on which the FCC could rely), and the lack of any non-arbitrary relationship between the type of neighborhood in which a device is used and the risk of harmful interference. While NAB asserts that low-power indoor RLAN operations may cause harmful interference to broadcast auxiliary service operations, the draft NPRM specifically addresses these scenarios, and anticipates that there is no

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[14] *Id*.

[15] *Id*.

[16] *See generally* Letter from Apple Inc., Broadcom Limited, Cisco Systems, Inc., Facebook, Inc., Google LLC, Hewlett Packard Enterprise, Intel Corporation, Microsoft Corporation, Qualcomm Incorporated, and Ruckus Networks, an ARRIS Company to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 17-183, at 1-2 (filed May 14, 2018) (addressing criticism of Monte Carlo analysis and other statistical approaches); *id.* (addressing erroneous claims that RKF's use of "averaging" concealed worst-case results); *id.* at 2-5 (addressing erroneous claims about RLAN duty cycle); *id.* at 11-12 (addressing use of clutter models); *id.* at 14-15 (addressing erroneous claims that RKF ignored devices operating in high-rise buildings).

[17] NAB Ex Parte, Attachment at 7.

significant harmful interference risk.[18] If NAB disagrees with this assessment, it will have ample opportunity to submit evidence to support its position during the comment phase of this proceeding.

The comment period will provide NAB the opportunity to offer more complete suggestions, supported by technical analysis. The NPRM already includes several paragraphs of questions that seek comment on these precise issues.[19]

ULTRA WIDE BAND ALLIANCE

UWBA submitted a brief filing raising concerns that 6 GHz RLAN deployments will cause harmful interference to unlicensed ultra-wideband ("UWB") systems. UWBA provides no technical analysis to support its claims, and fails to point out that, because UWB operations enjoy no protection from harmful interference, each of the interference scenarios they cite could occur *today* due to the deployment of fixed point-to-point links or the presence of wireless microphones.

Nonetheless, UWBA asks the FCC to impose unprecedented regulations favoring unlicensed UWB technology over all other unlicensed technologies. First it asserts, without any supporting evidence, that the proposed RLAN power levels would adversely affect UWB systems and should therefore be sharply reduced. It also asserts, again without evidence, that even the modest power levels proposed in the NPRM are somehow "not required"[20] by consumer and enterprise users. Separately, UWBA argues that 6 GHz unlicensed RLANs should be limited to only fixed devices. Again, this is based on no analysis, other than a conclusory statement that these devices "can't coexist with AFC mapping."[21]

UWBA's interference concerns are unfounded: 6 GHz RLAN operations will not "halt all innovation"[22] any more than RLAN technologies have "halted innovation" in the 2.4 GHz and 5 GHz bands, where RLANs are deployed ubiquitously and which have simultaneously seen significant innovation in low-power unlicensed applications such as RFID, ZigBee (and other IoT applications), Bluetooth (including Bluetooth Low Energy), and others. But UWBA's filing does not support any change to the draft NPRM because its requests are unsupported and undeveloped. Furthermore, the NPRM already asks specific questions about the appropriate RLAN power levels and the potential for interference to UWB applications.[23]

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[18] *See* Draft NPRM ¶¶ 61-70.

[19] *Id*.

[20] UWBA Ex Parte, Attachment at 1.

[21] *Id*.

[22] *Id*. at 2.

[23] Draft NPRM ¶¶ 13 n.36, 77.

Most importantly, we oppose UWBA's proposal to open up entirely new issues in this proceeding by considering the application of the power levels and power spectral density limits in the draft NPRM to UWB devices. Higher power operations with UWB's extremely large bandwidths, and with usage patterns totally unlike those evaluated by any technical study currently on the record, would raise issues well beyond the scope of the proceeding covered by the draft NPRM.

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To the extent that these filings raise substantive issues relating to coexistence with 6 GHz incumbent services, we look forward to addressing them in our comments and reply comments on the NPRM that the Commission is expected to approve on October 23rd. There is no need to alter the draft NPRM based on these filings because it already includes questions on each interference issue raised by Encina, NAB, and UWBA. Furthermore, the Commission should reject requests to dramatically expand the scope of the proceeding—for example by considering, for the first time in the U.S., making RLANs a *licensed service*, or by considering dramatic power increases for UWB operations.

Respectfully submitted,

Apple Inc.
Broadcom Inc.
Cisco Systems, Inc.
Facebook, Inc.
Google LLC
Hewlett Packard Enterprise
Intel Corporation
Marvell Technology Group
Microsoft Corporation
Qualcomm Incorporated
Ruckus Networks, an ARRIS Company